

(2/23/90)

ER PROGRAM DATA ASSESSMENT  
SUMMARY REPORT FORM

Batch No. 8909S078 - E0720 Site Area 2 - Hillside  
Laboratory TMA/Eberline No. of Samples/Matrix 5/Water  
Reviewer Org. TechLaw, Inc.  
Sample Numbers SW029006, SW029006D, SW029006FB, SW030006, SW035006

Tritium Analyses by Liquid Scintillation  
Data Assessment Summary

	H <sup>3</sup>	Comments
1. Holding Times	<u>V</u>	
2. Initial and Continuing Calibrations	<u>V</u>	
3. Blanks	<u>V</u>	
4. Lab Replicates	<u>V</u>	
5. Lab Control Samples	<u>R</u>	<u>See Action Item 1.</u>
6. Quench and Efficiency	<u>X</u>	<u>See Action Item 2.</u>
7. Sample Calculations	<u>V</u>	<u>See Comment 1.</u>
8. Overall Assessment	<u>R</u>	<u>See Comments.</u>

V = Data had no problems.

A = Data acceptable but qualified due to problems.

R = Data rejected.

X = Problems, but do not affect data.

Data Quality: Data contained in this batch were reviewed and found to be rejected. Refer to Action Items and Comment

Sections for discussion.

ADMIN RECORD

"REVIEWED FOR CLASSIFICATION

By R. E. Hoffman (1)  
Date 7-11-90

REVIEWED FOR CLASSIFICATION/UCM

By George H. Schlock  
Date @ 6/27/90

**Action Items:** 1) Lab Control Samples: The observed value of four Lab Control Samples (LCS) run 12/20/89 fell outside  $3\sigma$  of the expected value. As a result the tritium samples run 12/20/89 were flagged (R) rejected.

2) The laboratory SOP for tritium dated 2/80 was not followed for the analysis. However, the procedure used conformed to current laboratory practices and does not affect the data.

**Comments:** 1) Sample Calculations: A calculation error was found in the tritium activity calculation for sample SW029006FB. The reported value was  $280 \pm 250$  pCi/L, the corrected value was  $-40 \pm 240$  pCi/L.

2) The reported value of the laboratory control sample was  $55,800 \pm 1100$  pCi/L,  $52,000 \pm 1100$  pCi/L,  $42,800 \pm 900$  pCi/L, and  $50,000 \pm 1000$  pCi/L. The expected value was 48,400 pCi/L. The minimum detectable activity of the analysis was 400 pCi/L. The lab control samples were blank spikes. The laboratory Quality Control Procedure dated 12/5/84 states that corrective action will be taken if the "quality control values are outside the 3 sigma control limits".

3) The tritium standard reference material traceable to NIST Material 4927-C was diluted 11/5/86, the secondary standard solution used for the Lab Control Standard was diluted 9/13/89. The primary standard solution had reached its expiration date for performance tests.

4) The LCS and Blanks data provided for 12/20/89 showed that the tSIE (quench monitor) values were consistent.

**Note:** Data Summary Tables are attached.

Marilyn Ayers  
Reviewer Signature

2-28-99  
Date

RADIOCHEMICAL ANALYSIS  
ANALYTICAL RESULTS (pCi/L)

Page 1 of 1

TABLE #: 8909S078 - E0720

SITE NAME: Area 6 - Solar Pond

Sample Location	SW029006	SW029006D	SW029006FB	SW030006	SW035006	Reagent Blank	Reagent Blank	Reagent Blank	Reagent Blank
Sample Number	9/25/89	9/25/89	9/25/89	9/25/89	9/25/89	12/20/89	12/20/89	12/20/89	12/20/89
Sample Date	Water	Water	Water	Water	Water	Water	Water	Water	Water
Matrix	DL								
Parameter	Val.	+/-	DQ	Val.	+/-	DQ	Val.	+/-	DQ
Gross Alpha	2								
Gross Beta	4								
Total Strontium	1								
Total Cesium	1								
Radium 228	1								
Tritium	400	110 U	240	R	70 U	240	R	40 U	240
Uranium 234 & 233	0.6								
Uranium 235	0.6								
Uranium 238	0.6								
Plutonium 239 & 240	0.01								
Americium 241 & 242	0.01								
Radium 226	0.05								
Gamma scan									
Other Isotopes									

DQ Data Qualifier  
V Valid  
A Acceptable with qualifications  
R Rejected  
e0720L/rk40

U Indicates the parameter was not detected above the Instrument Quantitation Limit  
J Quantitation is approximate due to limitations identified during the quality control review  
• Value is rejected due to other contractual criteria examined during the quality control review  
•• Value is rejected due to blank contamination identified during the quality control review  
DL Detection Limit in PicoCuries per Liter (pCi/L)

EG&G ER Program  
Rocky Flats Plant

**Radiochemical Data Completeness  
Checklist for Tritium Analyses of Soil and Water**

- A. Yes Case Narrative  
    Yes Abnormalities explained  
    Yes Matrix Problems explained  
    Yes Instrument problems explained  
    Yes Improper collection, storage, preservation, container explained  
    Yes Hold times met, explained if not met
- B. Yes Initial and Continuing Calibration Data Package  
    Yes Detector ID with Program Settings  
    Yes Date of Performance Check  
    Yes Batch Number  
    Yes NIST Traceable Standards with Certification Date and DPMs  
    No Quench Monitor Values and CPM for Standard used to check long term performance of cocktail and instrument  
    Yes Background-Blank vials CPM Results
- C. Yes Blanks Data Package  
    Yes Detector ID  
    Yes Date Analyzed  
    Yes Collection Date  
    Yes Sample IDs counted with blank  
    Yes Detection Level reported
- D. Yes Lab Replicate Data Package  
    Yes Detector ID  
    Yes Date Analyzed  
    Yes Collection Date  
    Yes Value obtained for sample, replicates, mean values  
    Yes Count Durations of samples and backgrounds  
    Yes Statistical analysis of Range, Control Limits
- E. Yes Lab Control Samples Data Package  
    Yes Sample ID, Detector ID  
    Yes Values obtained, true value of sample  
    Yes Statistical Analysis of Results
- F. Yes Minimum Detectable Activity  
    Yes Background measurements  
    Yes Detector ID  
    Yes Date of count  
    Yes Calculated MDA comparison with Required Detection Level

- G. Yes Quench and Efficiency  
    Yes Quench Monitor used  
    Yes Quench Monitor Values and Efficiency Values  
    Yes Detector ID  
    Yes NBS traceable standards with certification date and DPM  
    Yes Batch number and sample IDs; Efficiency standard and  
        backgrounds used  
    Yes Volume added to cocktail  
    Yes Cocktail used  
    Yes Vials used
- H. Yes Sample Data Package  
    Yes Printed Report of results for sample, reruns  
    Yes Computer calculations  
    Yes Analyst initials  
    Yes Raw Data from counter, copies of notebook pages  
    Yes Instrument log to identify the sample ID with the raw data  
        from the counter